## CLAIMS

The following is a copy of Applicant's claims which identifies language being added with underlining ("_____") and language being deleted with strikethrough ("~~xxxxxx~~"), as is applicable.

1-31. Cancelled

32. (Previously presented) A method for identifying receptors, comprising:

(a) introducing a first polynucleotide encoding a receptor in to a cell, wherein the receptor comprises a ligand binding domain for a target ligand operably linked to a polynucleotide binding domain so that binding of the target ligand to the receptor activates transcription of a second polynucleotide complementing a selection agent; and

(b) culturing the cell on the selective media in the presence of the target ligand, wherein growth of the cell indicates interaction of the receptor with the target ligand.

33. (Previously presented) The method of claim 32, further comprising culturing the cell on selective media in the absence of the target ligand, wherein growth of the cell indicates the receptor constitutively activates transcription of the second polynucleotide.

34. (Previously presented) A cell comprising:

(a) a recombinant nuclear receptor that induces expression of a first polynucleotide in response to interaction with a target small molecule, wherein expression of the first polynucleotide complements a selective agent; and

(b) an adapter fusion protein comprising a human coregulator domain operably linked to an activation domain, wherein the adapter fusion protein enhances transcription of the first polynucleotide induced by the recombinant nuclear receptor.

35. (Previously presented) The cell of claim 34, wherein the cell is a yeast cell.

36. (Previously presented) The cell of claim 34, wherein the human coregulator domain is a coactivator domain selected from the group consisting of SRC-1 and ACTR.

37. (Previously presented) A method for identifying enzymes comprising:

(a) introducing a first polynucleotide into a cell that is unable to grow on selective media, wherein the cell expresses a recombinant receptor polypeptide that activates transcription of a second polynucleotide in response to interaction of the recombinant receptor polypeptide with a target substance and wherein the first polynucleotide encodes a polypeptide that produces the target substance;

(b) culturing the cell on the selective media; and

(c) selecting the cell that grows on the selective media.

38. (Previously presented) The method of claim 37, wherein the selective media does not contain an amino acid necessary for survival.

39. (Previously presented) The method of claim 38, wherein the amino acid is selected from the group consisting of histidine and alanine.

40. (Previously presented) The method of claim 37, wherein the first polynucleotide encodes an enzyme that produces the target substance.

41. (Previously presented) The method of claim 37, wherein the first polynucleotide encodes an engineered enzyme.

42. (Previously presented) The method of claim 37, wherein the first polynucleotide encodes a naturally occurring enzyme.

43. (Previously presented) The method of claim 37, wherein the transformed cell further expresses an adaptor fusion protein comprising a human coregulator domain operably linked to an activation domain, wherein the adaptor fusion protein enhances transcription of the first polynucleotide induced by the recombinant receptor polypeptide.

44. (Previously presented) The method of claim 37, wherein the adaptor fusion protein comprises a human coactivator for transcription of the second polynucleotide.

45. (Previously presented) The method of claim 37, wherein introducing a first polynucleotide into the cell comprises introducing a plurality of polynucleotides encoding enzymes having different substrates into the cell, and wherein growth of a cell on the selective media indicates that the plurality of polynucleotides encode enzymes for producing products that complement the selective media.

46. (Previously presented) The method of claim 45, wherein the product of one of the enzymes is the substrate of another of the enzymes.

47. (Previously presented) A method for selecting cells comprising:

(a) introducing a first polynucleotide into a cell, wherein the cell expresses a recombinant receptor polypeptide that activates transcription of a second polynucleotide in response to interaction of the recombinant receptor polypeptide with a target substance;

(b) culturing the cell on selective media in the presence of a first selection agent; and

(c) selecting the cell that survives on the selective media in the presence of the selection agent, wherein expression of the second polynucleotide inhibits growth of the cell.

48. (Previously presented) The cell of claim 52, wherein the second polynucleotide encodes a cytotoxic polypeptide.

49. (Previously presented) The cell of claim 52, wherein the cytotoxic polypeptide comprises a proapoptotic polypeptide.

50. (Previously presented) The cell of claim 52, wherein the first selective agent comprises 5-fluoroorotic acid.

51. (Previously presented) The cell of claim 52, wherein the second polynucleotide encodes orotidine-5'-phosphate decarboxylase and wherein a toxic substance produced by the orotidine-5'-phosphate decarboxylase comprises 5-fluorouracil.

52. (Previously presented) A cell comprising:

(a) a first polynucleotide which encodes a polypeptide that produces a target substance;

(b) a recombinant receptor polypeptide that activates transcription of a second polynucleotide, wherein the second polynucleotide complements a selection agent for culturing the cell on selective media, in response to interaction of the recombinant receptor polypeptide with the target substance.

53. (Previously presented) The cell of claim 52, wherein the first polynucleotide encodes an enzyme that produces the target substance.

54. (Previously presented) The cell of claim 52, wherein the first polynucleotide encodes an engineered enzyme.

55. (Previously presented) The cell of claim 52, wherein the first polynucleotide encodes a naturally occurring enzyme.

56. (Previously presented) The cell of claim 52, wherein the cell further expresses an adaptor fusion protein comprising a human coregulator domain operably linked to an activation domain, wherein the adaptor fusion protein enhances transcription of the first polynucleotide induced by the recombinant receptor polypeptide.

57. (Previously presented) The cell of claim 56, wherein the adaptor fusion protein comprises a human coactivator for transcription of the second polynucleotide.

58. (Previously presented) The cell of claim 52, wherein the first polynucleotide is a plurality of nucleotides encoding enzymes having different substrates, wherein growth of a the cell on selective media indicates that the plurality of polynucleotides encode enzymes for producing products that complement the selective media.

59. (Previously presented) The cell of claim 58, wherein the product of one of the enzymes is the substrate of another of the enzymes.

60. (New) The cell of claim 52, wherein a set or pathway of polypeptides produce the target substance.